REMARKS

Claims 23-50 remain in the application including independent claims 23, 41, 47, and 48. New claims 51-56 have been added.

The drawings stand objected to for not showing the first and second electric motors mounted at least partially within a wheel hub periphery. This is clearly shown in Figures 2A and 2B with wheel hub 28 defining the periphery and the motors 36 being mounted at least partially within the periphery.

Claim 47 has been amended to overcome the claim objection.

Claim 42 stands rejected under 35 U.S.C. 112, first paragraph. The Examiner argues that claim 42 refers to first and second motors mounted at least partially within a common outer wheel hub periphery and that the specification appears to provide no support for such a limitation. The support for this is clearly shown in the drawings, specifically Figures 2A and 2B. The motors 36 are mounted at least partially within a common outer wheel hub periphery defined by the wheel hubs 28. The specification has been amended to clarify this relationship, as shown in the drawings. No new matter has been added.

Claims 42-45 and 47 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite. The dependency of claim 42 was changed from 23 to 41. The Examiner indicates confusion with regard to the term "common outer periphery" in claim 47. Claim 47 recites first and second wheel hubs driven by first and second driving axle shafts about a common axis of rotation. The wheel hubs each include a common outer periphery defined about this axis of rotation. As is known in the art, wheel hubs that are mounted for rotation about a common axis are of the same size and thus the outer periphery of the hubs are common relative to one another. Thus, the wheel hubs include a common outer periphery that is defined in relation to the common axis of rotation. Applicant believes that no amendments are necessary to claim 47 to clarify this. Thus, Applicant believes that all rejections under 35 U.S.C. 112 are overcome.

Claims 23-36, 38, 40-46, and 48-50 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 24, 32, and 33 of copending application 08/801,531. Applicant is willing to file a terminal disclaimer, however, while the copending application has been allowed it has not yet been assigned a patent number. Applicant will file the terminal disclaimer when notice is received of the patent number. If, in response to this amendment, the application is deemed to be in condition for allowance, Applicant request that the Examiner contact Applicant by telephone to discuss the filing of the terminal disclaimer.

Independent claim 41 and dependent claims 49 and 50 do not currently stand rejected under any cited prior art. Applicant assumes that these claims are in condition for allowance if the provisional double patenting rejection is overcome. Further, claim 42 inadvertently claimed dependency to claim 23. The dependency of claim 42 has been changed from 23 to 41, thus, claims 42-45 should also be in condition for allowance if the provisional double patenting rejection is overcome.

Claims 23-28, 36, 37, 40, and 42-45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Travis in view of Eichinger. Claim 42 inadvertently claimed dependency to claim 23 instead of claim 41. This has been corrected and, as claim 41 is not currently rejected under any cited prior art, Applicant believes claims 41-45 are in condition for allowance subject to the provisional double patenting rejection.

Claim 23 includes the features of first and second driving axle shafts that are co-linear and define a lateral axis of rotation, first and second electric motors that define first and second longitudinal axes of rotation that are transverse to the lateral axis of rotation and that drive first and second gear sets, and first and second planetary gear sets that are driven about the lateral axis of rotation by the first and second gear sets.

Travis teaches the use of multiple electric motors and multiple ring and pinion gear sets to power an axle at optimum efficiency. As admitted by the Examiner, Travis does not teach the

use of a planetary gear set in addition to the ring and pinion gear sets. The Examiner seeks to modify Travis with a planetary gear set as taught by Eichinger. Eichinger is directed to an electric drive system designed specifically for cooperation with a planetary gear system installed within a wheel hub. Eichinger teaches directly driving a wheel hub 6 with a motor 2, i.e. there is no need for a ring and pinion, where the motor output shaft 11 and the wheel hub 6 rotate about a common lateral axis of rotation. This configuration is opposite of what the Travis reference teaches. Further, the motor output shaft 11 of Eichinger directly drives a sun gear 14, which in turn drives the wheel hub 6 such that the shaft 11, sun gear 14, and hub 6 all rotate about the common lateral axis of rotation.

It is improper to modify a base reference in such a manner that the benefits of the base reference are destroyed. Eichinger teaches mounting a sun gear on the motor output shaft. To modify Travis as taught by Eichinger necessitates location of the planetary gear set in the hub. Further, the motor output shaft would be rotating about the lateral axis of rotation to directly drive the sun gear of the planetary gear set mounted inside the wheel hub. This would mean that only one electric motor could be used at each wheel hub in Travis, i.e. multiple motors could not be used. This defeats the benefit of Travis in using multiple motors and multiple ring and pinion gear sets.

There is no teaching in either Travis or Eichinger of electric motors that drive a gear set to define a longitudinal axis of rotation in combination with a planetary gear set that is driven by the gear set about a lateral axis of rotation. The only disclosure of such a combination is in the subject application.

Claim 25 includes the feature of the planetary gear sets being incorporated into first and second gear boxes that house the first and second gears and which are mounted to the first and second electric motors, respectively. This is clearly not taught in either Travis or Eichinger. Eichinger only teaches planetary gear sets installed within a wheel hub. The Examiner argues that the hub can be described as a gearbox. However, as set forth in claim 25, the gearboxes

house the first and second gear sets, which are driven by the motors about a longitudinal axis of rotation as well as housing the planetary gear sets. The wheel hub of Eichinger only houses the planetary gear set. There is no suggestion, teaching or disclosure of a ring and pinion gear set and a planetary gear set mounted within a common housing.

Claim 27 includes the feature of first and second sun gears mounted for rotation with first and second ring gears. As discussed above, Eichinger teaches a direct drive for a wheel hub where the sun gear is mounted directly on the electric motor shaft 11. There is no teaching, suggestion, or disclosure of driving the sun gears with the ring gears as claimed by Applicant.

Claims 29-31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Travis in view of Eichinger and further in view of Kawamoto. Claim 29 includes the feature of the first planetary ring gear hub driving the first axle shaft and the second planetary ring gear hub driving the second axle shaft. For the reasons discussed above, it is improper to modify Travis as taught by Eichinger. Further it is improper to modify either Travis or Eichinger with Kawamoto. The sun gear 22 in Kawamoto is directly mounted on the motor output shaft 11 in a manner similar to that shown in Eichinger and would require modification of Travis to have only one motor at each wheel.

However, even if properly combined, Kawamoto does not teach using a planetary ring gear hub to drive an axle shaft. The Examiner argues that planetary gear system (2, 22, 23, 24 . . .) drives wheel shaft 4. First, the reference numeral 4 is a non-rotating component and not a wheel shaft. Kawamoto shows a joint 4 that has one end splined to bore 27 to be held against rotation, col. 3, lines 64-65. Second, the ring gear hub 24 of the planetary gear set 2 is held against rotation so it cannot possible drive a wheel shaft. See col. 3, lines 53-59. Thus, Applicant believes that claims 29-30 are patentable over the cited references.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Travis in view of Eichinger and further in view of Tatra-Werke. Claim 38 includes the feature of the first and second electric motors being supported on a common axle housing extending along the lateral

axis of rotation. For the reasons discussed above, it is improper to modify Travis as taught by Eichinger. Further, Tatra-Werke does not teach mounting the first and second electric motors on a common axle housing that extends along the lateral axis of rotation. What the Examiner argues is the common axle housing (1, 2) of Tatra-Werke, does not extend along the lateral axis of rotation as defined in claim 23. As set forth in claim 23, both the driving axle shafts and the wheel hubs rotate about the lateral axis of rotation. In Tatra-Werke the wheel 7 and the shaft in housing 1, 2 rotate about different axes.

Claim 39 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Travis in view of Eichinger and Anglada ('044). Claim 39 includes the feature of the electric motors extending vertically upwardly from the lateral axis of rotation. For the reasons discussed above, it is improper to modify Travis as taught by Eichinger. Further, the vertical orientation of the motor of Anglada would not work with the direct drive system for the planetary gear set as taught by Eichinger, which teaches the sun gear being mounted directly to the motor output shaft.

Claim 48 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Austin in view of Quartullo. Claim 48 includes the feature of the electric motors being mounted adjacent to the wheels at a vertical position that is higher than a vertical position of the floor of the aisle. The Examiner argues that it would be obvious to replace the engine of Austin with the individual electric drives as taught by Quartullo. Quartullo teaches mounting the motor 18 and gear set 48, 50 adjacent to the wheel within an envelope that does not extend above the wheel. If *Austin* is modified by the motor mounting shown in *Quartullo*, i.e. the motors do not extend above the wheel, the motors in Austin would not be at a vertically higher position than the floor.

The Examiner indicates that Austin already shows an engine to have a portion located above the floor, however, this engine is positioned at the rear end of the vehicle and is not *adjacent to the wheels* as claimed by Applicant. The Examiner further argues that it is obvious to replace the engine of Austin with a pair of independent electric drives as suggested by Quartullo. If the engine of Austin is replaced with the drive system of Quartullo it is not positioned

adjacent to the wheels as claimed by Applicant and could not drive the axle shafts as the drives would be positioned at least two rows of seats behind the wheels.

For the reasons set forth above, all claims should be allowed. An indication of such is requested. We enclose a check to cover the costs of additional dependent claims. If additional fees are required the Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds for any additional fees or credit the account for any overpayment.

Respectfully submitted,

CARLSON, GASKEY & OLDS

Dated: August 9, 2001

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CERTIFICATE OF MAIL

I hereby certify that the enclosed Amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Assistant Commissioner of Patents, Washington D.C. 20231 on this 9th day of August, 2001.

Laura Combs

n/clients/meritor/ip00613/patent/1amend613

APPENDIX 1
Specification

(Version With Markings to Show Changes Made)

42. (Amended) An assembly as set forth in Claim [23] 41, including first and second planetary gear sets driven by said first and second gear sets about said lateral axis of rotation.

47. (Amended) An automotive vehicle drive unit assembly comprising:

a first driving axle shaft;

a second driving axle shaft, said first and second driving axle shafts being co-linear and defining [and] an axis of rotation;

a first wheel hub driven by said first driving axle shaft;

a second wheel hub driven by said second driving axle shaft, said first and second wheel hubs driven about said axis of rotation, said first and second wheel hubs each including a common outer periphery about said axis of rotation;

a first gear set for driving said first wheel hub;

a second gear set for driving said second wheel hub; and

a pair of electric motors including a single first electric motor mounted at a non-parallel angle relative to said axis of rotation of said first driving axle shaft for driving said first gear set and a single second electric motor mounted at a non-parallel angle relative to said axis of rotation of said second driving axle shaft for driving said second gear set independently from said first electric motor wherein one of said pair of electric motors is mounted at a 90 degree angle extending generally horizontally and forwardly relative to said axis of said first wheel hub and the other of said pair of electric motors is mounted at a 90 degree angle extending generally

horizontally and rearwardly relative to said axis of said second wheel hub, said first and second electric motors being mounted at least partially within said common outer periphery.